We Claim:

1. A sensor system comprising:

a first and second transmit signal chain for transmitting signals at respective first and second frequencies;

a first and second receive signal chain for receiving reflections of the signals transmitted by the corresponding first and second transmit signal chains; and

a signal processing unit for evaluating respective reflections received by the first and second receive signal chains to determine whether or not an object is composed of one type of material or of another type of material, the evaluation comprising a comparison of the respective reflections received by the first and second receive signal chains to a benchmark that indicates whether or not an object is of one type of material or another type of material;

wherein the first and second frequencies are selected such that a different amount of energy from signals transmitted at the first frequency is reflected by materials of one type than from signals transmitted at the second frequency, and where similar amounts of energy are reflected by objects of another type from signals transmitted at both the first and the second frequencies.

2. The sensor system of claim 1, wherein the signal processor calculates a magnitude ratio of the respective reflections received by the first and second receive signal chains, which is then compared to the benchmark.

3. The sensor system of claim 1, wherein the first and second frequencies are radio frequencies in the C-band and K-band respectively.

4. The sensor system of claim 3, wherein the reflections are decomposed into In-phase and Quadrature channels of both the first and second frequencies.

5. The sensor system of claim 1, wherein the first and second frequencies are both acoustic frequencies.

6. The sensor system of claim 5, wherein the reflections are decomposed into In-phase and Quadrature channels of both the first and second frequencies.

7. The sensor system of claim 1, wherein the objects of one type of material are animate objects and the objects of another type of material are inanimate objects.

8. The sensor system of claim 1 mounted onto the underside of a vehicle between the front and rear wheel assemblies.

9. A method of sensing comprising:

i) transmitting signals on first and second frequencies;

ii) receiving reflections of the transmitted signals at the first and second frequencies;

iii) processing the received reflections of the transmitted signals to determine whether or not objects are present; and

iv) if objects are present, further processing the reflections to determine whether or not objects are of a certain type of material or not, wherein the processing of

the respective received reflections at the first and second frequencies to determine whether or not objects are of the certain type of material or not includes comparing the respective reflections received at the first and second frequencies to a benchmark to determine whether or not an object is of the certain type of material or not;

wherein the first and second frequencies are selected such that a different amount of energy from signals transmitted at the first frequency is reflected by materials of one type than from signals transmitted at the second frequency, and where similar amounts of energy are reflected by objects of another type from signals transmitted at both the first and the second frequencies.

10. The method of sensing according to claim 9, wherein the processing of the reflections to determine whether or not objects are of the certain type of material or not includes calculating a magnitude ratio of the respective reflections at the first and second frequencies, which is then compared to the benchmark.

11. The method of sensing according to claim 9, wherein the first and second frequencies are radio frequencies in the C-band and K-band respectively.

12. The method of sensing according to claim 11, wherein the reflections are decomposed into In-phase and Quadrature channels of both the first and second frequencies.

13. The method of sensing according to claim 9, wherein the first and second frequencies are both acoustic frequencies.

14. The method of sensing according to claim 13, wherein the reflections are decomposed into In-phase and Quadrature channels of both the first and second frequencies.

15. The method of sensing according to claim 9, wherein the objects of one type of material are animate objects and the objects of another type of material are inanimate objects.

16. The method of sensing according to claim 9 further comprising the step of subtracting a static clutter estimation from the respective reflections received at the first and second frequencies.